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Governance of metropolitan areas for delivery of public services in Latin America: the cases of Bogota, Lima and Mexico City

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Abstract. One of the key issues at metropolitan level is the provision of public services and this paper highlights the importance of understanding the governance of public services in the context of increasing urbanization and decentralization. This paper provides a comparative analysis on metropolitan governance in Latin America by analysing specific case studies. The objective is to identify how the governance setting in metropolitan areas shapes the process and the results of providing public services to wider population. We examine metropolitan governance by employing a 3x3x3 model as a framework for addressing key issues about urban services delivery. Bogota, Lima and Mexico City are the metropolitan areas selected. Secondly, we focus on three sectors: transport, solid waste collection and water. Finally, the analysis focuses in three aspects of governance: coordination, financial sustainability and coverage and quality. The data collection process involved field research in Bogota, Lima and Mexico City.

1 Introduction

The urban transition in Latin America throughout the twentieth century was relatively rapid, and the move to urban living continues at an accelerated pace in several countries in the region. One of the most striking recent features of urbanization in Latin America has been the emergence of metropolitan areas: cities that have surpassed the limits of their immediate outermost periphery, expanding beyond their administrative boundaries. In some cases, urbanization and urban expansion have led to the emergence of megacities that are national centers of economic or political power, such as Sao Paulo and Mexico City. Metropolitan areas face significant economic, social, political and environmental challenges that extend beyond the borders of local governments, including different administrative divisions across the territory. The provision of public services has become one of the most critical and pressing metropolitan concerns. While the theory and praxis of providing services in metropolitan areas have been subjects of great interest in advanced countries, they have been largely downplayed in low- and middle-income countries (Bahl 2013). Furthermore, some normative discussions about metropolitan areas in Latin America have focused on ideal government models, yet there is very little in the existing literature on the problems of providing public services at the metropolitan level. This paper highlights the importance of knowing and understanding how public services are provided in the context

of increasing metropolitanization and decentralization due to the hypothesized negative impact of politico-administrative fragmentation. According to some studies, fragmentation translates into weak governance, creating substantial difficulties in providing services. Despite this predominant assumption, the body of knowledge on the key governance challenges in metropolitan areas, especially in less developed countries, is not robust and lacks empirical work and comparative studies. This study contributes to the literature by implementing a comparative analysis of public service provision in metropolitan areas in Latin America.

Our general research question refers to the characteristics and outcomes of governance for delivering public services in metropolitan areas, and how, in practice, governance schemes accommodate different contexts. More specifically, the paper deals with the following questions: What are the underlying characteristics of metropolitan governance and organization in Latin American countries? How do metropolitan areas organize the provision of public services? What is the performance of services delivery in terms of financial sustainability, coverage and quality? How do governance and outcomes vary across different services and metropolitan areas?

We employed a 3x3x3 model of comparative analysis with three metropolitan areas (Bogota, Lima, and Mexico City), three services (public transport, solid waste collection, and piped water), and three aspects of governance (coverage and quality, financial sustainability, and coordination). Analyzing the provision of public services in different metropolitan areas in the Latin American region, we discuss how variation in metropolitan organization translates into specific outcomes across the selected cases. A variety of governance structures are identified, a few of which attempt to reverse some of the negative effects of jurisdictional fragmentation. The collected data includes secondary sources (statistics, reports, and documents), and field research in Bogota, Lima, and Mexico City, where a number of focus groups, interviews and technical visits took place. The paper includes a synthetic literature review, a description of the methodological design, an overview of the metropolitan organization and structures in the three selected areas, the research results and discussion. We conclude with a number of final remarks that can be useful for metropolitan level public policies.

2 Metropolitan Governance and Provision of Local Public Services

Metropolitan areas are huge and complex urban areas whose functional scope extends beyond their jurisdictional boundaries. There is commonly political-administrative fragmentation, and policy implementation resides with individual autonomous local authorities. This is a challenge for urban planning, management and policy design. Because of their scale, complexity and fixed government structures, metropolitan areas conduct their planning and policy tasks in difficult environments. Metropolitan areas must provide services and infrastructure in sophisticated ways because the structure of land use is more diverse, the magnitude and complexity of expenditure is much greater, and the size and concentration of the population is larger than in other urban areas (Slack 2007). One of the key areas of public action at the metropolitan level is the provision of services. As metropolitan areas extend to multiple local jurisdictions, there is an increasing need to expand service provision to fulfill the population's social needs. Inadequate provision of basic services translates into significant gaps between demand for and supply of urban services. Large intra-urban disparities can develop. Given the intricacy of metropolitan areas, governance plays an important role in the effective delivery of services. Governance defines the quantity and quality of services provided, their efficiency, and their equitable cost sharing (Jones et al. 2014, Slack 2007, Bird, Slack 2007).

The long-standing debate on how to govern and manage metropolitan areas, whether via decentralized or consolidated structures, has been framed mostly in the theoretical discussion around government decentralization and its consequences for efficiency and equity (Bird, Slack 2007, p. 730). According to the subsidiarity principle, subnational levels of government achieve greater welfare gains by adjusting the provision of public goods and services to citizens' preferences and local costs (Oates 1997). Decentralization favors accountability, and horizontal competition triggers a better supply of public

goods (Tiebout 1956). On the other hand, consolidation facilitates the exploitation of economies of scale, the management of externalities, and the quest for equity (Treisman 2000). Consolidation can also contribute to minimizing the dangers of elite capture and corruption, especially in developing countries (Prud'homme 1995).

Echoing the principles above, the Public Choice School argues that decentralized metropolitan governments spur effective and efficient service delivery by promoting competition (Yaro, Ronderos 2011), whereas Regionalism and New Consolidationist supporters argue in favor of metropolitan governments (Lowery 2000). In practice a variety of metropolitan structures have been implemented, based either on the fragmented version or on different forms of government consolidation. Slack (2007) and Bird, Slack (2007), for instance, identify the one-tier fragmented model, the single-tier consolidated model, the two-tier model, and the one-tier model with voluntary cooperation.

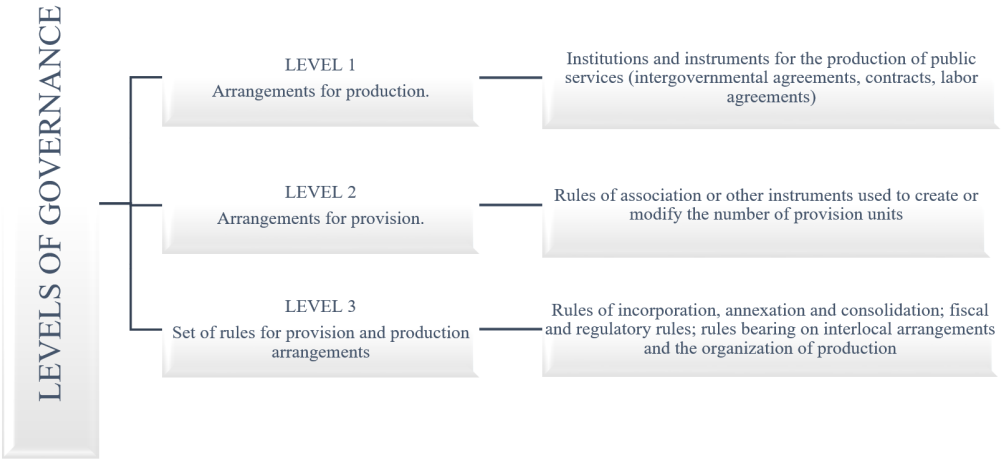
According to Storper (2014), fragmentation is an inevitable condition in metropolitan areas, and the regulation of the resulting interdependent relations in the absence of an overarching political authority is highly problematic. The enduring gaps between functional and administrative boundaries mean that there will always be governance problems at hand, and neither complete consolidation nor fragmentation is likely to resolve these fundamental metropolitan issues. Rather than a single government, metropolitan areas require structures of governance that are sufficiently open to allow for diverse solutions in an environment characterized by variable conditions (Parks, Oakerson 1989). Following Parks, Oakerson (1989), jurisdictionally fragmented metropolitan areas are complexly organized. However, organizational diversity and complexity do not necessarily imply institutional failure and can in fact lead to higher efficiency. By means of agreements and associations, local governments, civil society, and the private sector acting together in a coordinated manner can achieve acceptable governance structures (Feiock 2004). Therefore, there is no single correct way to organize metropolitan areas, and no single geography or organization of governance, and arrangements for service provision are place- and time-specific (Bahl 2013, Slack 2007, Parks, Oakerson 1993, 1989). In the particular case of public services, efficient scales and preferences can be multiple and heterogeneous, and evolve over time (Slack 2007, Parks, Oakerson 1989). Public services also have diverse production functions and financial and cost structures (Parks, Oakerson 1989).

The fundamental distinction between the provision and the production of public services makes the case for organizational structures that allow for a more complete depiction of metropolitan governance and its complexity. Local governments are provision units that use a variety of alternative production arrangements: direct production, private contracting, coordinated or joint production, or franchising. Therefore, metropolitan areas comprise multiple provision units that are linked in numerous ways to a variety of production units. This variety usually represents rational accommodations to diversity. The choice of governance arrangements is contingent upon a multiplicity of environmental factors, yet governance depends, above all, on the capacity to elaborate on, change and enforce the rules within which provision and production occur (Parks, Oakerson 1989). Governance structures can transcend municipal boundaries and allow problem solving, rule making and efficiency on a metropolitan basis. However, when close voluntary organization and cooperation are not achieved, metropolitan governance weakens (Parks, Oakerson 1993). Accordingly, the different levels of governance (provision and production arrangements and the sets of rules and institutions) are what matter (Figure 1).

3 Methodological Framework and Data Collection

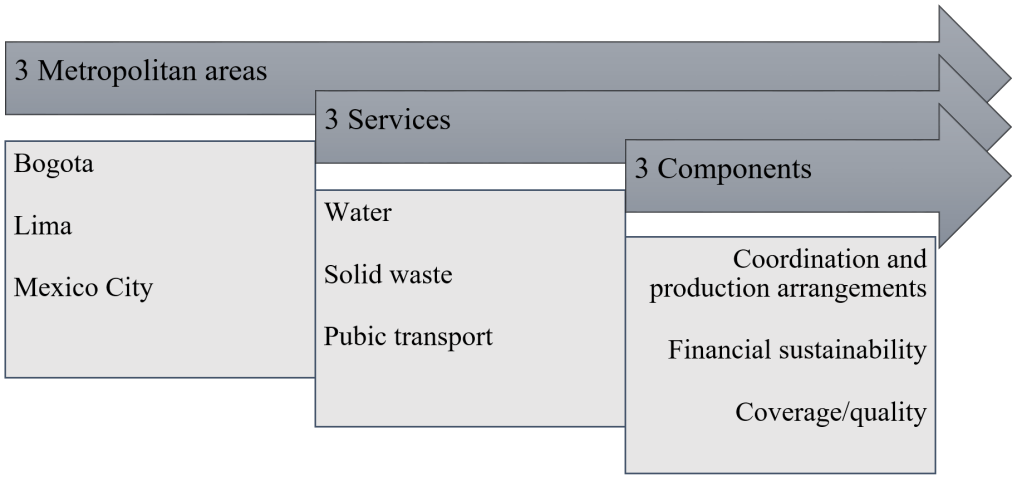
As a methodological strategy for this research we employed a comparative case study analysis implemented by means of a 3x3x3 model. The first 3 in the model refers to the selected metropolises, the second indicates the number of services and the third relates to specific aspects of governance (Figure 2). This approach is a useful starting point for an international and comparative analysis of metropolitan governance in the highly-urbanized countries of Latin America with its varying city sizes, metropolitan structures, and outcomes.

The metropolitan areas of Bogota, Lima, and Mexico City are the subjects of this



Source: Authors' elaboration based on Parks, Oakerson (1993)

Figure 1: Metropolitan governance organization



Source: Authors' elaboration

Figure 2: Components of the 3 x 3 x 3 model of analysis

analysis. All three metropolitan areas have undergone processes of rapid metropolization which have engendered important challenges for the provision of public services and infrastructure. They all belong to the Latin American region and have some cultural background and colonial roots in common. The three metropolitan areas are capital cities that have special political-administrative status. Even though their countries operate under different political systems, with unitary governments in Colombia and Peru, and a federal government in Mexico, they have undertaken important decentralization processes. These metropolitan areas also offer the possibility of illustrating variability in governance structures. In addition, they present different historical forms of metropolitan expansion and institutionalization.

Although the number of public services provided in metropolitan areas is extensive, we focus on three of the most critical sectors in the urban context that are generally provided at the local level: transport, solid waste collection, and water. These sectors are strategic in urban planning and affect the day-to-day life of the population. Moreover, they denote the kinds of service that pose unique challenges in metropolitan environments (Boex et al. 2013, Jones et al. 2014). Jones et al. (2014) suggest that governance plays an important role in the effective delivery of services in urban areas through coordination

mechanisms, finances, and technical operation. This analysis includes these three areas: coordination and production arrangements; financial sustainability; and service coverage and quality. Given the scope of this project, the analysis does not include elements such as civil society participation, transparency, and accountability.

The data collection process included desktop and field work. Documental and secondary statistical information from international, national and local sources was gathered. The results and discussion in this paper also rely on the data collected during the fieldwork period. In 2016, we conducted field research in the three selected cities and organized a final seminar and a conference in Mexico City. The fieldwork included workshops, interviews and technical visits. Nine workshops were organized: one for each sector (transportation, water, and waste collection) in each city. The participants at these workshops were actors or experts in the governance of public service provision: the academic sector, civil society, local government and private suppliers. We located sources of potential participants based on their location and willingness to participate. The workshops were designed as small focus groups where participants reported on and discussed the situation and the challenges to each public service that different actors perceived at the metropolitan level. There was a number of guiding questions about the three categories of analysis, and we allowed other issues to emerge (see the guiding questionnaire and participants in the methodological appendix). The workshops lasted approximately two hours each, and took place in small auditoriums.

Furthermore, twelve semi-structured interviews were carried out. The sample universe was composed of local authorities such as municipal mayors or specific local officials (in the urban services area), community leaders, and sector-specific managers or providers who were unable to participate in the workshops but were relevant actors in some area of urban public services. Although this was a small-scale interview project, it provided enough scope for identifying and developing cross-case evidence rather than generalities. We assessed the adequacy of the sample in terms not of size, but of the sample's ability to supply key information needed for the analysis.

Six technical visits to the metropolitan peripheries were incorporated as part of the field research. Due to time and budget constraints the number of technical visits was restricted. The criteria for choosing a location were access to some local informants, a big and a small municipality outside the central city, and the presence of important formal or informal housing development expansion. The assumption was that these municipalities would experience emerging and persistent governance issues. Technical visits involved observation, interviews and informal conversations with residents. The results were presented and discussed at the final seminar.

Based on analysis of the transcripts and reports on the interviews, visits and workshops, major issues were identified and reported. A contextual characterization of the governance of each metropolitan area was developed. This was followed by an analysis based on the different services (transport, solid waste collection and water). The comparative approach allowed us to evaluate variations across metropolitan areas and services. This paper's size limit precludes a full in-depth analysis of each case; nonetheless, valuable findings are discussed for an initial assessment of metropolitan governance.

4 Overview of Metropolitan Structures in Mexico City, Lima and Bogota

On a larger scale, Latin American cities are expanding rapidly and frequently faster than population growth elsewhere in the country. The result has been the emergence of urban areas of a large territorial size comprising multiple jurisdictions. Alongside territorial and functional restructuring, metropolitan areas have faced political decentralization aimed at producing new spaces for participation, reducing fiscal imbalance problems, and organizing the local and territorial levels of the State in order to implement social policies and deliver services efficiently. Despite these generalized trends, metropolitan areas in each country have highly diverse features. This section presents background on the institutional and territorial structures in the metropolitan areas of Mexico City, Lima and Bogota.

Source: Authors' elaboration

Figure 3: Mexico City Metropolitan Area

4.1 Mexico City Metropolitan Area

Mexico City Metropolitan Area (MCMA), one of the largest metropolitan areas in the world, is the result of the explosive growth and expansion of the urban center during the twentieth century. Due to the displacement of industrial activity and housing towards the periphery, the city began its expansion into other jurisdictions outside its administrative boundaries in the 1940s (Trejo 2013). At the time of the 2010 Population Census, MCMA comprised over 20 million inhabitants, and had a land size of almost 8,000 square kilometers and an average population density of 2,557 inhabitants per square kilometer (SEDESOL et al. 2012). In 2013, MCMA accounted for 18% of the national population and around 25% of total gross domestic product.

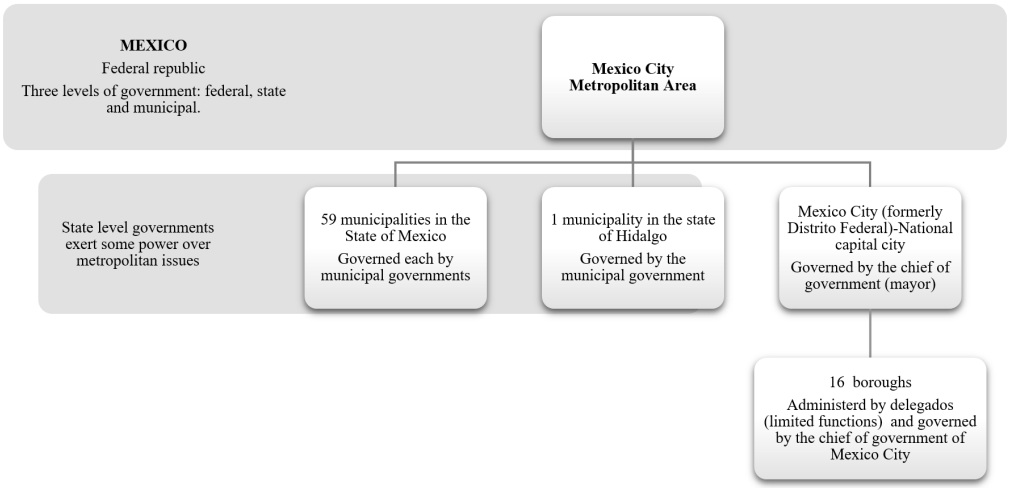
MCMA includes the administrative area of Mexico City[1], formerly called the Federal District, 59 adjacent municipalities in the State of Mexico, and a municipality in the state of Hidalgo (Figure 3). Mexico City proper, itself composed of 16 boroughs, is the political and economic seat of power. Prior to the approval of a political reform in 2015, it was governed by special statute. In contrast to states, it did not have full autonomy, and until 1997 its head of government was not elected directly by the inhabitants, but appointed by the President. Furthermore, the head of government had no constitutional or regulatory capacity and boroughs had neither the autonomy nor all the functions of municipalities.

Metropolitan areas in Mexico do not have legal status as official jurisdictions, but the constitution allows intermunicipal cooperation on a voluntary basis. Several governments operate on different levels, leading to the evolution of different and frequently clashing policies and rules. The administrative powers of 60 municipalities overlap with the government of Mexico City, which in turn interacts with the powers of two different states, Mexico and Hidalgo, as well as with the power of the central government (Figure 4). Politico-administrative fragmentation, measured as the number of jurisdictions with more than 100,000 inhabitants, indicates that 39 municipalities and boroughs have populations of over that figure. This fragmentation decreases if we consider Mexico City proper as a single local government (24 jurisdictions with populations of over 100,000 inhabitants).

Legal planning, coordination and political structures have not been conducive to metropolitan-scale organization. Attempts at constructing effective metropolitan agreements and commissions have been largely ineffective, due to the lack of financial, regulatory and decision-making authority (Cenizal 2015)[2]. Thus MCMA entails a complex set of

[1] Mexico City proper.

[2] Article 115 in the Mexican Constitution allows for the coordination of states and municipalities to address urban problems. Two or more municipalities and their respective states are also allowed to create a conurbation commission. Article 122 allows cooperation between Mexico City and its neighboring municipalities.



Source: Authors' elaboration

Figure 4: Government structure, Mexico City Metropolitan Area

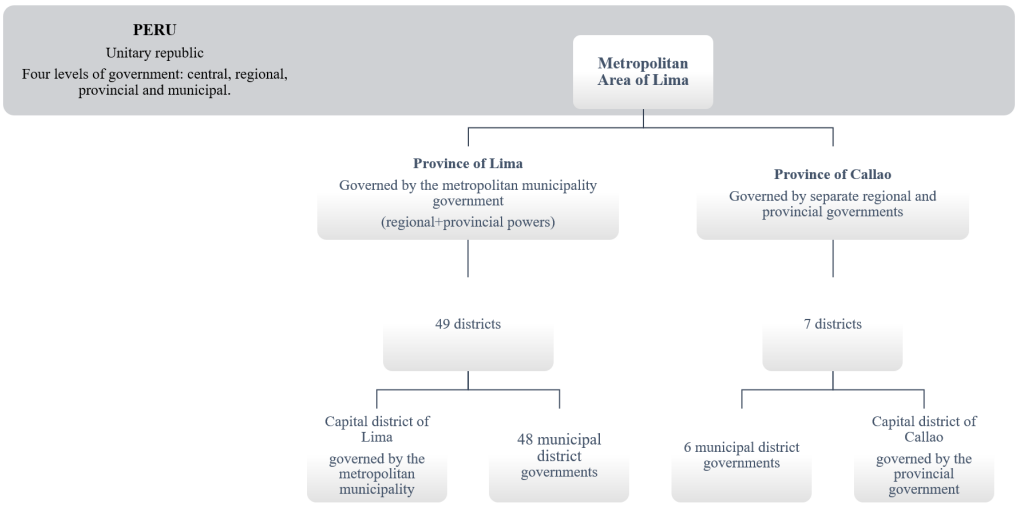
governmental entities with overlapping federal, state, and local powers and an intricate organizational structure that complicates metropolitan governance arrangements, in particular planning schemes seeking to deliver services efficiently (Perlman et al. 2011).

4.2 Lima

The Metropolitan Area of Lima includes the provinces of Lima and Callao. In the province of Lima, the metropolitan municipality assumes the functions of both regional government and provincial municipality. In the province of Callao, regional and provincial government are separate; this means that the Regional Government of Callao and the Provincial Municipality of Callao exercise their respective functions over the same jurisdiction. The province of Lima covers 49 districts governed by 48 district municipalities, whereas the capital district is governed by the Metropolitan Municipality of Lima. In turn, the Province of Callao has seven districts governed by six district municipalities, and the capital district of Callao is governed by the Provincial Municipality of Callao (Figure 5). The population has grown rapidly since the mid-twentieth century. In 1940, Lima and Callao had a population of 645,000 inhabitants; in 1972 this had risen to over three million, and in 1993 it was over six million. In the 1970s the two provinces became a conurbation (Figure 6). In 2013, the population was 9,752,000, of which one million were in Callao (INEI 2014). A total of 25 of the 49 districts have a population of over 100,000.

Lima not only has special arrangements as a capital district; it also has been treated differentially in the decentralization process. While other regional governments, including the regional government of Callao, have taken on functions such as health and education, the process has been discriminatory against the Metropolitan Municipality of Lima, where central government remains the provider of various public services (Diálogos de Políticas Pública 2015). The Organic Law of Municipalities allows the use of coordination mechanisms between municipalities to ensure the efficient use of public resources. Municipalities can create associations with other municipalities called mancomunidades. In order to provide services and implement joint infrastructure projects, seven such associations have been created. They have developed efforts to coordinate and provide services in security and waste management[3]. However, mechanisms for coordination between the municipalities of Lima and Callao have been weakly implemented.

[3] http://www.limacomovamos.org/boletines/las-7-mancomunidades-de-lima/#!prettyPhoto[inline]/-0/



Source: Authors' elaboration

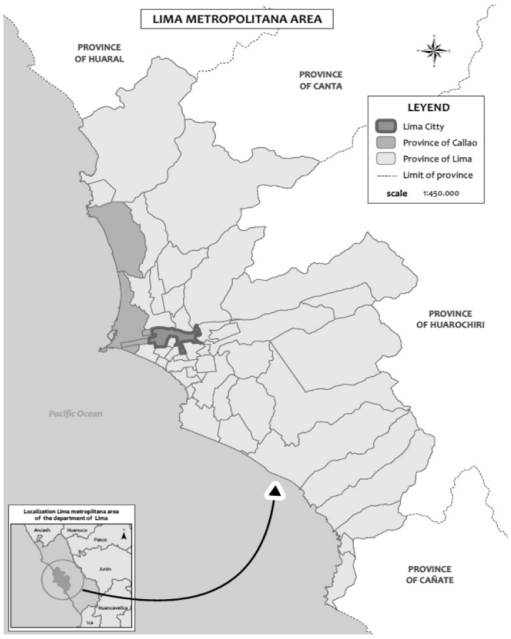
Figure 5: Government structure, Metropolitan Area of Lima

4.3 Bogota

According to the National Administrative Department of Statistics (DANE 2017) the Metropolitan Area of Bogota includes Bogota District and the municipalities of Bojacá, Cajicá, Chía, Cogua, Cota, El Rosal, Facatatíva, Funza, Gachancipá, La Calera, Madrid, Mosquera, Nemocón, Soacha, Sibaté, Sopó, Subachoque, Tabio, Tenjo, Tocancipá and Zipacón (Figure 7). It had a population of 7.8 million inhabitants in 2005 rising to 9.3 million in 2015[4], making Bogota the largest metropolitan area in Colombia, one of the largest in South America, and one of the 33 most-populated metropolises in the world (Smith 2014). The Bogota District was the product of Decree 3640, approved in 1954, which annexed the surrounding municipalities of Engativá, Fontibón, Suba, Usme, Usaquén and Bosa through the Seventh Ordinance of the Administrative Council of Cundinamarca. The territory of Sumapaz was annexed in 1955. According to Article 199 of the 1986 political constitution, administration of the district is the responsibility of the municipal council. Therefore, the city of Bogota is organized as a special district, without subjection to the ordinary municipal regime, under the conditions fixed by the law. With the approval of the Colombian political Constitution of 1991, Bogota became a Capital District with special status. The new Constitution, which includes an Organic Statute for Bogota, redefines the Capital District and eliminates the concept of annexed municipalities to introduce the concept of localities.

The Organic Law of Territorial Ordering sets the principles of good governance in the metropolitan area. This law recognizes that metropolitan areas are territorial associative schemes and that the national government should promote metropolitan cooperation. Article 15 allows associations between metropolitan areas. These can take place between two or more metropolitan areas to jointly organize the provision of public services, the implementation of regional projects, and the fulfillment of administrative functions. Such projects may be developed through contracts, agreements or plans. There are also municipal associative bodies, as in the case of Savannah Centro and Northern Savanna and an agreement of cities in the periphery. Although the Bogota metropolitan area is fragmented, unlike in Mexico City and Lima the dynamics of the metropolitan area are strongly concentrated in Bogota District (Figure 8).

[4]For more information about the census in the metropolitan area: http://www.dane.gov.co/files/-censo2005/resultados_am_municipios.pdf



Source: Authors' elaboration

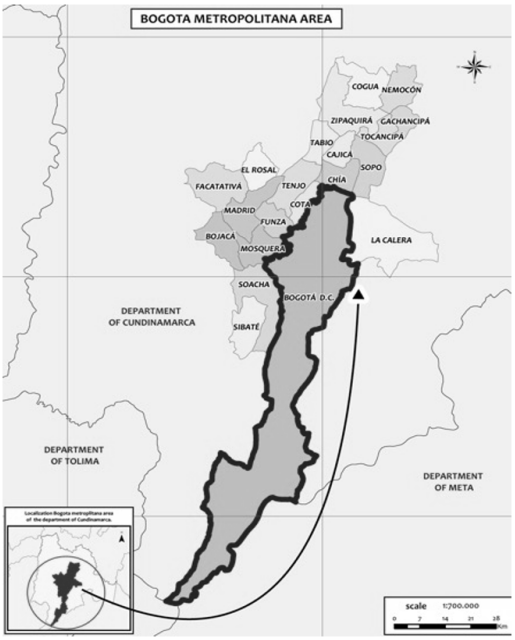
Figure 6: Metropolitan Area of Lima

5 Metropolitan Governance of Public Services: An exploratory examination

In this section we analyze the governance structures in place in our three metropolitan areas according to the explicit and implicit constituent elements of service supply. The main findings regarding coordination, financial sustainability and coverage/quality are discussed. Considering the issue of coordination contributes to understanding governance organization, whereas looking at the financial aspects and coverage help to illustrate efficiency and equity. The approach suggested by Parks, Oakerson (1993) and summarized in Figure 1 is a useful guiding scheme to identify the different arrangements and levels of metropolitan governance that operate in each service and metropolitan area: arrangements for production (level 1), arrangements for provision (level 2) and the set of rules for production and provision (level 3).

5.1 Waste collection

Each metropolitan area has a more or less complex governance organization and operation depending on the diversity of actors involved in its regulation, management and production. According to Article 115 of the Mexican Constitution, solid waste management is provided by the municipalities. In Mexico City proper each borough must provide the service (level 2). Three schemes of production are: public; private; and public-private (level 1). In some boroughs, participatory budgeting projects for local waste collection is a supplementary formal mechanism for providing the service. In both the State of Mexico and Mexico City proper there is a large informal sector (waste pickers, burreros -pickers that use donkeys to transport waste- or carretoneros -pickers that transport waste by carts-) who have historically had strong unions and powerful leaders. Some municipalities have a Councilman (regidor) and in municipalities with greater organizational complexity there is a Director of Public Services. Regarding level 3 of governance – where the rules for provision and production arrangements for service delivery are made – the government of the State of Mexico formulates waste management policy through the Ministry of Environment. In Mexico City proper the Ministry of the Interior, the Ministry of Works and Services through its General Directorate of Urban Services, the Ministry of the Environment and the Environmental Attorney of Land Management participate in urban solid waste regulation and management.

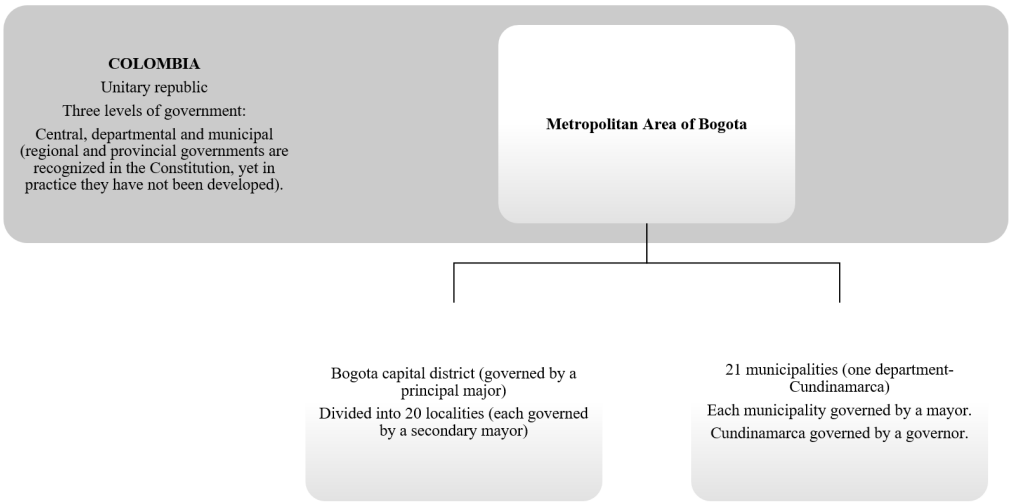


Source: DIRNI, recovered by Mayor of Bogota (2015)

Figure 7: Metropolitan area of Bogota according to DANE (2005 census)

In Lima, provincial municipalities are responsible for waste disposal whereas district municipalities are in charge of the collection and transportation of solid waste. In the capital districts of Lima and Callao, the provincial municipalities are responsible for the collection and transport of solid waste (Durand 2012). Service provision operates under a two-tier arrangement throughout fifty districts and two provinces (level 2). Cleaning and waste collection are supplied directly by municipalities or by private companies contracted to municipalities (level 1). Two large private companies, Petramas and Innova Ambiental, provide the service for several municipalities. There are also municipalities with mixed production schemes. Provincial municipalities regulate the disposal of solid, liquid and industrial discharge. The Metropolitan Municipality of Lima has a special legal regime with special functions in sanitation. It organizes the Metropolitan System of Solid Waste Treatment and Disposal, signs concession contracts for waste management services, and controls their operation. The district municipalities decide on areas for landfill and waste accumulation (Organic Law of Municipalities Nr 27972). The Ministry of Health's General Directorate of Environmental Health controls landfill and authorizes the work of companies that collect municipal waste. The Direction of Environmental Quality formulates national policy on solid waste management; however, it conducts waste management policy with limited normative prerogatives (level 3) (Durand 2012).

According to Law 142, normative control of the waste collection service in Colombia is the responsibility of the National Regulatory Committee for Drinking Water and Basic Sanitation, which regulates competition between service providers to avoid monopolies. The National Superintendence of Domestic Utility Services controls and inspects the efficiency of the service. There is a Municipal Special Administrative Unit of Public Utilities which directs, controls and supervises the provision of road-cleaning services and the collection and final placement of solid waste. The District Department of Environment regulates and promotes environmental sustainability. Lastly, the municipal intercapital consortium supervises the administrative, technical, operative, commercial, economic, and financial aspects of solid waste management and collection (level 3) (Ciudad Limpia 2017). The service is provided by Bogota Capital District and the rest of the municipalities (level 2). In recent years, Bogota's solid waste service has been supplied by the Water Company. There are also other companies involved, such as Ciudad Limpia, which deals with waste in Bosa and Kennedy, and a number of recycling companies that collect, transport, and



Source: Authors' elaboration

Figure 8: Government structure, Metropolitan Area of Bogota

separate, where appropriate, solid waste. The city administration has implemented a new sanitary scheme which assigns five areas of service to five private enterprises (level 1).

Coordination is weak or altogether lacking, depending on the city. In Bogota there is no horizontal coordination between Soacha and Bogota, but service providers and recyclers cooperate at the local level. In Lima, incipient horizontal coordination is sought through the formation of associations of municipalities, but Callao is excluded. Provision and production in MCMA lack mechanisms for coordination between boroughs and municipalities.

In Bogota, operative costs are financed from fees that are subject to differentiation, and provision is self-sustainable. Financial sustainability in this case is facilitated by one specific characteristic of the administrative organization in Bogota which is stratification[5]. Domiciliary public services operate under a cross-subsidy system, the so-called estratos. This system provides an important administrative function by which the upper classes pay higher rates for services or utilities, subsidizing the cost of services for the lower classes.

Half of the municipalities in metropolitan Lima have financial deficits due to low payment rates and collected fees that do not cover expenditures, and provision has to be financed by intergovernmental transfer.

In MCMA, unlike Bogota and Lima, there are no formal fares for this service. Instead, citizens tip drivers and waste pickers who collect, sort and transport waste. Other than labor costs, the operation is highly subsidized and is funded by local governments on a shared-costs basis. Financial capacity is weak in general, and there is great variation in between jurisdictions.

Official data show more than 90% service coverage in all three cities, yet these figures often exclude informal settlements. In Bogota, for instance, official coverage is informed by the stratification system, which omits informal housing. In Lima, the mean coverage figure, 90% (MINAM 2014), hides the important variation across municipalities. In MCMA coverage is usually based on Census registrations that are limited in including informal housing. As in other cases peripheries tend to receive lower coverage and quality. Similarly, in MCMA there are important spatial disparities, with lower coverage in the northeast periphery, and there are significant problems of frequency and quality in the service. Table B.1 in Appendix B summarizes the main findings on this service.

[5]This cross-subsidy system consists of six 'estratos' based on socio-economic criteria: Stratum 1 includes the lowest income population and stratum 6 the highest income population.

5.2 Water delivery

Providing an adequate water supply in metropolitan areas is technically and politically very complex. Market and state failures have resulted in intricate arrangements for service provision that involve four broad actors: public, informal, community-based, and private operators that participate as part of public-private partnerships (Jones et al. 2014). In MCMA the federal government is involved in water regulation through the National Water Commission (CONAGUA), which is in charge of authorizing the use of national water, the bulk supply of water, the construction and operation of the infrastructure, and the preservation of aquifers. There is the Federal Basin Agency for the Valley of Mexico (Aguas del Valle de Mexico) and the Water and Sewer Metropolitan Commission. Piped water services must be provided by local governments. Municipalities decide whether to manage and operate their water systems directly or through decentralized public bodies. In Mexico City proper, SACMEX is the decentralized body responsible for providing water to the sixteen boroughs. In addition, four private firms attend to some segments of the water service across the boroughs[6]. In the states of Mexico and Hidalgo, 48% of municipalities operate mixed provision schemes where the state, the municipality and neighborhood committees overlap; 28% of municipalities have their own decentralized company; 10% of municipalities have water services operated by community/neighborhood bodies; and 14% of municipalities are direct producers. Informal mechanisms, the resale of water and clandestine connections are the only sources of water available to residents in several areas of the city (Rosales 2015).

In Metropolitan Lima, water is provided by Potable Water and Sewerage Service of Lima (SEDAPAL), a public company operating under a private legal regime. SEDAPAL depends on the National Ministry of Housing and is regulated by the National Superintendence of Sanitation Services (SUNASS), a public decentralized organization. SUNASS, in turn, regulates and supervises water and sanitation provision and pricing. The National Authority of Water (ANA) administers and monitors natural sources of water and authorizes the volumes of water that service providers can take. According to Law 28696, SEDAPAL provides water and sanitation services to Lima and Callao provinces. Other areas can be included through a housing-sector Ministerial Resolution if there is territorial continuity and the service can be technically provided by SEDAPAL.

Bogota's Water Enterprise (Aguas de Bogota) provides services to Bogota and eleven nearby towns. The company operates at a regional level as a private corporation. Aguas de Bogota is subject to Law 142 and to all other norms that modify this law. The company is regulated by the Commission for the Regulation of Drinking Water and Basic Sanitation (CRA), which also sets the fares. Aguas de Bogota is the subsidiary company of a public enterprise, Acueducto, which provides water and sewerage services. Acueducto's service model in Bogota is based on division of the metropolitan area into five zones. Acueducto provides the service to the whole metropolitan area, not as a public but as a private firm.

Even though the Constitution allows voluntary cooperation, the supply of water services in MCMA lacks intergovernmental, horizontal and institutional coordination. Asymmetries in provision are significant because small municipalities are unable to benefit from economies of scale or to internalize positive spillover effects. The provision of water is a municipal function in Bogota, but the same company delivers the service to the whole metropolitan area. This provision, however, is determined by the private legal status of the producer rather than by formal horizontal coordination between Soacha and Bogota DC. Likewise, in metropolitan Lima, horizontal coordination lacks relevance because SEDAPAL is a central entity that supplies the whole metropolitan area (see Table B.2 in the appendix).

In MCMA as a whole, tariffs cover only 64% of operating costs and the rest of the cost has to be subsidized by the government. Only in Mexico City proper are subsidies based on geographic location and depend on the socioeconomic characteristics of each

[6]Mexico City is divided into four zones receiving commercial and maintenance services. Zone A includes three boroughs in the northwest and is served by SAPSA. Zone B comprises four boroughs and is served by Industrias del Agua de la Ciudad de México. Zone C incorporates four boroughs which are serviced by Tecnología y Servicios del Agua. Zone D covers five boroughs and is provided by Agua de México.

neighborhood. Payment rates are sufficient to maintain some financial stability. In contrast, municipalities in the State of Mexico show significant heterogeneity depending on the provision scheme and the capacity to collect tariffs. Small jurisdictions that do not meet the requirements for establishing their own operator are the worst-off financially because they lack access to specific public resources. As with other services, tariffs in Bogota are determined according to the cross-subsidy system. Operational costs are covered by fares and the company is considered financially healthy. The situation in Lima is similar, with the operation financed by collected tariffs. There are some consumption subsidies, and a transition to socioeconomic stratification is under way.

Official coverage data focuses on formal provision. The available data shows 100% coverage in formal neighborhoods of Bogota DC and around 82% in Soacha. In Lima, coverage is approximately 89%, with running water provided 24 hours a day in central Lima and between 19 and 22 hours a day in the rest of the metropolitan area. The quality of the service and the water itself accomplish minimum standards. In MCMA 79% of the population live in houses with a piped water connection; however only 72% of the population has daily access to water. In this metropolitan area daily access to water is highly unevenly spatially distributed and most peripheral municipalities and boroughs have extremely low availability. In these peripheries not only the service, but also the water itself is poor quality. The service is severely affected by aging and poorly-maintained pipes which can result in the loss of more than 25% of the water.

5.3 Public transport

In MCMA, public transportation is provided under varied government and concessional supply schemes. Public transport consists of the following systems: subway (Metro), rapid transit bus (Metrobus and Mexibus), light train, trolleybus, the Passenger Transport Network (RTP), a suburban train (Suburbano), Eco-bici (a public bicycle-sharing system), and private bus concessions (colectivos). According to the latest origin-destination survey (INEGI 2007), approximately 50% of the 22 million daily journeys in the metropolis are covered by buses and microbuses (as transport concessions), but Bus Rapid Transit (BRT) systems that combine public and private participation, have experienced the largest expansion in recent years. Some of these systems – subway, light train, trolleybus, the RTP and Eco-bici – operate only or mostly in Mexico City proper. The governance of public transport involves the following stakeholders: federal, state and local transport authorities, private transport companies and, at least on paper, a transportation metropolitan commission. In addition, there is a large informal sector. Despite the local nature of the service, public transport is generally provided by intermediate level governments (Fernández 2002). Intermediate level governments operating the public transport is the prevailing situation in Mexican municipalities which, despite holding institutional powers that allow them to intervene in the formulation and implementation of public passenger transport programs, have delegated the task to state governments due to their lack of the human, technical and financial resources needed to fully assume regulation and service management (IMCO 2012). In Mexico City proper the local Ministry of Mobility is in charge of planning and managing public transport. In the municipalities of the State of Mexico, planning and regulation of public transport concessions is the responsibility of the Ministry of Mobility, while the Ministry of Communications runs the mass-transit system, Mexibus. In the state of Hidalgo regulation and planning is based on the Transport Law and undertaken by a decentralized agency dependent on the Ministry of the interior (OECD 2015). Some municipalities have a transport and transit agency that is responsible for regulating local traffic and the building and maintenance of roads. The Metropolitan Commission (COMETRAVI) was created in 1994 through an agreement signed by the Federal Ministry of Transport and Communications and the governments of the State of Mexico and Mexico City proper. However, COMETRAVI is a non-operating agency.

In Bogota, the BRT Transmilenio and local buses form the core of public transport services and cover over 50% of journeys taken, with walking and motorcycles as significant modes of transport in the peripheries. The Ministry of Transportation is in charge of formulating and adopting policies, plans, programs and projects at the national level. The Ministry of Mobility operates at the municipal level in Bogota and Soacha. These

two local ministries are advised to work in coordination to solve mobility and transport problems. The rest of the municipalities do not have such local ministries.

In Lima, provincial municipalities are in charge of regulating public transportation, but in the 1990's Peru adopted a public transportation model with little regulation and dominated by private supply. Since 2010 a BRT line, COSAC, has connected the north and the south of the city. A group of private companies run the COSAC service by means of a concession. In 2012 the first metro line was inaugurated to connect the east with the south, and a second line is under construction. The operation of metro lines is also given as a concession to private companies. These two systems represent only 4.4% and 3.4% of journeys in the metropolis respectively (Survey, Lima Como Vamos, 2015). Most metropolitan trips are taken on private bus lines that obtain authorization for specific routes from the municipalities of Lima and Callao and "rent" these authorizations to bus owners and drivers. This system is known as the commission-affiliation system. Since the companies receive a payment per vehicle operating and not per passenger, there is an excess of vehicles competing for passengers. There are 561 authorized routes with 38,000 vehicles in Lima and Callao (Ministerio de Transportes y Comunicaciones 2016).

The different public transport alternatives in MCMA do not operate as an integrated system. There is significant institutional and vertical as well as horizontal fragmentation. Efforts to better integrate or coordinate transportation systems are limited to the integration of the subway, Metrobus and Ecobici payment systems, but these only cover Mexico City proper. In the State of Mexico there is a predominance of 'colectivos'. A suburban train has operated between downtown Mexico City and some of the municipalities since 2008. The project was formulated and implemented mainly by the federal government, with some State of Mexico and Mexico City government involvement.

In metropolitan Lima, an agreement was reached to allow Callao and Lima to grant permits to private companies to operate across both provinces. However, lack of provincial coordination has resulted in overlapping routes. Institutional coordination is also problematic, and there are three different payment systems in the city. Metro and Metropolitano do not operate in Callao.

In Bogota, the 2016–2020 Development Plan seeks to strengthen an integrated system of public transportation including the collective public transportation and individual public transportation services (Bogota 2015). The program is also pursuing improvements to regional connectivity by inter-jurisdictional cooperation. However, the initiative has remained limited, and for instance Transmilenio has only four stations in Soacha. There is a consolidated model of infrastructure development, but this model is controlled by the central government.

In the MCMA, the financial sustainability of government-operated transport systems is precarious. They are heavily subsidized and their cost-revenue structures are not subject to technical analysis, leading to significant inefficiency. Excessive subsidization has contributed to local governments' financial burden. 'Colectivos' face financial constraints for investment, maintenance and operation. The system with the highest prices and in the best financial situation is the suburban train, but it requires significant funding for investment and maintenance. Bogota's BRT system has been sustainable due to resources injected by the district government, otherwise the tariffs would be insufficient to keep it running. The intermunicipal buses are self-sustainable in the sense that they operate on their own revenue. And in Lima, the Metropolitano system operates at costs while the subway is subsidized by central government. The rest of the services are private and self-sustained.

In MCMA official public transport coverage is above 90%, but peripheral areas exhibit deficits which are often compensated for by informal supply. The same applies in Bogota and Lima, whose official statistics do not reveal significant disparities. According to interviewees' perceptions, substantial inefficiencies, poor quality, low capacity, poor safety, low frequency and high prices are critical problems that require attention in all three of the metropolises.

Overall, services in MCMA are the most fragmented and have the lowest performance in terms of efficiency and equity. Public transportation is the service with the weakest governance and poorest performance in the three metropolises.

Table 1: Classification of service provision schemes

	MA Bogota	MA Lima	MA Mexico City
Piped water	In consolidation	Consolidated	Fragmented
Waste recollection	In consolidation	In consolidation	Fragmented
Public transport	In consolidation	Fragmented	Fragmented

Source: Authors' elaboration

5.4 The models of service provision

Despite the established structures of government, intergovernmental relations and decentralization processes, metropolitan governance structures differ not only across metropolises, but also across sectors within the same metropolis. Arrangements for service provision and production and the related legal structures and rules vary depending on the local context and the service to be provided. The multiple forms of organization for the provision of services illustrate the diversity of governance structures and their evolution. We use the concept of consolidation to classify different governance schemes. Consolidation is understood here as a condition in which the supply area of a service is metropolis-wide. Metropolis-wide supply areas can be achieved by means of production arrangements or by annexation. Metropolitan governance can be classified into three categories: i) fragmented, where provision and production organization preserve the administrative structure of the metropolitan area, and there are no coordination arrangements or other formal or informal efforts to deliver metropolitan wide services; ii) consolidated, where a service is provided and produced completely or mostly by one entity; and iii) in consolidation, where different schemes, public or private, formal or informal, are aimed to build a metropolitan approach for service supply, with metropolitan zones gradually incorporated into the service supply area. See Table 1 for a summary.

The three services in the Metropolitan area of Bogota are classified as in consolidation. Transmilenio provides public transportation services in part of Soacha, and the Water Enterprise of Bogota also increasingly provides services outside the capital district. The consolidation of metropolitan area-wide service supply is explained to a good extent by the fact that the main political jurisdiction contains more than 80% of the population and covers most of the urban area. Actually, the metropolitan area as such has been in consolidation due to the historic process of annexation of surrounding municipalities. New areas beyond Bogota DC have been incorporated into the capital district and to the service delivery area over time. However, Soacha remains outside Bogota DC even though it is a rapidly-growing territory in demographic terms and has strong functional relations with Bogota.

In Lima, the water service is consolidated because the public company SEDAPAL provides water to the whole metropolitan area. Waste collection services are in consolidation with intermunicipal agreements seeking to coordinate and cooperate to deliver the service by means of associations of municipalities. However, so far, such initiatives have made slow progress. The transport service is fragmented. However, in the near future proposals may arise, since the subway service is expected to cover the province of Callao.

In Mexico City, piped water, waste collection and public transportation services are fragmented because they are mainly provided by multiple local governments and organizations with almost a complete lack of arrangements for metropolitan cooperation and coordination.

We find that the three models have implications for coordination, financial sustainability and coverage. Inter-jurisdictional coordination and cooperation and central government schemes are not observed in fragmented services. Services in consolidation relate to diverse arrangements for integrating or expanding the service area. Consolidation has depended mostly on national government initiatives and structures, although some form of cooperation or coordination may be necessary at lower levels. Fragmentation entails greater financial difficulties, especially when small governments and municipalities

with low financial and fiscal capacity are unable to achieve economies of scale or their administrative structures lack the necessary resources. The more consolidated a service governance structure is, the better its financial capacities appear to be. Generally, the greatest difficulties in all cities and sectors are related to expenditure on infrastructure and investment. Consolidation contributes to better coverage and quality, and also to more equal access to services.

6 Final Remarks

This study has responded to the relative gap in understanding the specific empirical experiences of metropolitan governance of the delivery of public services in Latin America. Given that jurisdictional fragmentation is an inherent characteristic of metropolitan areas, distinguishing between provision and production/supply has helped us to identify variations across services and cities. In this comparative analysis of metropolitan governance in Mexico City, Bogota and Lima we have found not only that governance structures differ, but also that in some instances service supply is adapted to accommodate specific needs and sociopolitical contexts, even if such arrangements do not necessarily correspond to local rationalities. Such is the case of water provision in Lima, where the service is supplied by a public company that depends on the national government. In the metropolitan area of Bogota, institutional arrangements have been modified to gradually expand the supply of transport services to areas beyond the capital district as far as the municipality of Soacha. Although this has been a slow and problematic process, Transmilenio has established a few stations in Soacha. Another example is the water company in Bogota, which supplies the capital district as a public service and supplies other municipalities as a private company via arrangements with local governments. Also in Lima, some effort has been made towards intermunicipal coordination in the waste-management sector by means of associations of municipalities.

Even though the water service in Lima is the most consolidated governance structure discussed here, water services are provided by an agency which depends on the national government. Locally-guided projects or initiatives are weaker. Secondly, the consolidation processes in Bogota are strongly related to the historic annexation of territories to the main city. Third, the relatively good financial performance in service provision in Bogota is due to the cross-subsidy system. Fourth, despite the absence of metropolitan governments, governance can solve problems. The quality of that governance in turn affects technical, financial and social outcomes and performance. These cases exemplify how service supply with a metropolitan approach is not necessarily a process in which fragmented areas are governed by a single entity that provides all services to the wider territory, but can be a slow process of consolidation led by various arrangements and actors across sectors and jurisdictions.

On the other hand, the metropolitan area of Mexico City is a case in which coordination, financial sustainability and equity in every public service is strongly affected by high fragmentation which overpowers any approach to interjurisdictional coordination and cooperation for economic and social efficiency. Despite constitutional autonomy for voluntary intermunicipal cooperation, there are very few instances of coordination. It is not possible to conclude, however, that the lack of coordination and poor governance derive purely from the administrative fragmentation of the territory. In this specific metropolitan area, political economic factors appear to play a determining role in explaining the weak metropolitan governance structures including party and political competition between states and between municipalities; three-year municipal government terms; a culture of all-embracing political power and others.

We argue that fragmentation creates substantial difficulties in providing urban services. Yet empirically, governance for service provision is place-specific and depends on local political culture and overarching state legal frameworks. In the absence of formal metropolitan government, the operating structures of governance can reverse the negative impact of fragmentation. Lastly, metropolitan structures can vary to accommodate the characteristics of the services provided.

While these findings are not generalizable, they illustrate the significant empirical

variation to be found across metropolises and sectors. They also illustrate the need, in less developed countries, for a debate on metropolitan governance that goes beyond the traditional approach to jurisdictional fragmentation and metropolitan governments. These findings can be used as a basis from which to identify questions for future comparative research or further in-depth case studies either by sector or by metropolitan area. Future work in our research will include in-depth analysis by sector to deal with questions that include the historical evolution of metropolitan configurations; the way politics have shaped metropolitan bureaucracy and government; how civil participation and transparency are embedded in metropolitan governance organization; and private actors' role in the production of services.

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A Appendix: Fieldwork

Guiding questions (focus groups and interviews)

1. What is the role or what place does the service occupy in the metropolitan/urban agenda?
2. What is the general diagnosis (depending on the case) of the main problems faced by the provision of (water provision, waste recollection and public transport) at the metropolitan level and in the metropolitan periphery in particular?
3. In terms of coverage, to what extent can we speak of an accessible and universal service?
4. What is the assessment of the frequency and quality of the service?
5. What is the appreciation of the characteristics and the physical support of the service?
6. Are there infrastructural or operational deficiencies?
7. To what extent do authorities worry about improving the provision of the service?
8. What are the perspectives, limits and opportunities for the expansion of the service to reach metropolitan coverage?
9. What are the possibilities for an Integrated Metropolitan Service System?
10. What are the challenges for local governments in providing te service?
11. What are the general characteristics of the tariff system and the cost of provision?
12. What is the general evaluation of the financial sustainability in the provision of the service?
13. What is the evaluation of the current institutional and operational coordination between different jurisdictions and levels of government?
14. What efforts are developing at different tiers of government to improve the service?
15. What is the role of political factors in the operation and provision of the service?

Technical visits

Ecatepec (Mexico City)
Melchor Ocampo (Mexico City)
Puente Piedra (Lima)
Soacha (Bogota)
Ciudad Bolivar (Bogota)

Interviews

1. Bogota

Municipality of Soacha (director of public services)
Community leader (Ciudad Bolivar)

Table A.1: Focus groups: schedule and participants

City	Actors	Water	Waste	Transport
Bogota	Academia	—	—	—
	Civil society	Recicle Colombia (NGO)	TECHO (ONG)	—
	Local government	Local secretary of the environment	Local secretary of the environment	Transmilenio
	Provider	Empresa de Agua de Bogotá-"Acueducto"	Empresa de Agua de Bogotá-"Acueducto"	Transmilenio
Lima	Academia	—	—	—
	Civil society	Ciudad Nuestra, Lima Como vamos, Contribuyentes por respeto (NGOs)	Alternativa, AFIN (NGOs)	Luz Ambar, Transitemos (NGOs)
	Local government		Waste management office (municipalities of Lima, Miraflores, San Miguel and Puente Piedra)	Urban development office (Ate)
	Provider		Waste management office (municipalities of Lima, Miraflores, San Miguel and Puente Piedra)	
Mexico city	Academia	Expert on metropolitan water governance (Centro Interdisciplinario de Estudios Metropolitanos)	Expert on solid waste managment (Universidad Nacional Autonoma de Mexico)	Expert on urban transportation and mobility (El Colegio de Mexico)
	Civil society	Isla Urbana (NGO)	Agencia de Gestión Urbana-AGU (Urban Management Agency)	Institute for Transportation and Development Policy (ITDP) and ASIICSO Habitus (NGO)
	Local government	Local secretary of the environment	Local secretary of the environment	—
	Provider	Sistemas de Agua de la Ciudad de Mexico-SACMEX	Local authorities of street cleaning (Servicio de limpia, Cuauhtemoc)	Passenger Transport Network System (RTP)

2. Lima

Municipality of Puente Piedra (manager of urban development)
Autoridad Autónoma del Sistema Eléctrico de Transporte Masivo de Lima y Callao – AATE (agengy in charge of the Metro Project in Lima and Callao)
Transport office, Municipalidad de Lima
SEDAPAL (public company of water and sanitation)

3. Mexico City Metropolitan Area

Ecatepec (They had accepted the meeting, but refuse to answer the questions)
Melchor Ocampo Municipality (Mayor)
Melchor Ocampo (director of urban services)
Melchor Ocampo (director of water provision)
Melchor Ocampo (coordinator or public transport)
Consultant of Ferrocarriles Suburbanos (Suburban train)

B Appendix: Summary of findings

Table B.1: Aspects of metropolitan governance in the waste collection service

			Bogota	**Lima**	**Mexico City**
PROCESS	Coordination		* There is no coordination for the provision of the service. Each municipal entity chooses a public or private operation. * Before the absence of horizontal coordination, small municipalities sometimes allowed the Cundinamarca department company to provide the service. * There is some institutional coordination, mainly with the Association of Bogota Recyclers.	* The Metropolitan System of Treatment and Elimination of Solid Waste does not include Callao. * Despite strong normative incentives for coordination and cooperation, there are no adequate mechanisms to ensure institutional coordination. * Advancement in horizontal coordination through mancomunities.	* There is some institutional coordination within the Federal District. * In municipalities of the State of Mexico some public-private coordination takes place when private companies provide the service as concessions. * An environmental metropolitan commission focuses mainly on air pollution problems. * There is no metropolitan institutional action and an absence of horizontal coordination among jurisdictions.
RESULTS	Supply	Financial Sustainability	* Fees are subject to the socioeconomic classification of properties (estratos). This creates the possibility of cross-subsidies. * Fees vary from 3,096 to 28,508 Colombian pesos. * Total fees include sweeping and cleaning,commercialization, collection and transport. * Financially sustainable.	* Significant differences in payment rates across municipalities. * Reliance on intergovernmental transfers to provide the service where there is a low payment rate. * 17 districts have a 50% deficit in expenditure coverage. * Generally not self-sustainable, but there are significant differences across districts.	* No official tariffs or fees. * Payment is made via tips to drivers and waste pickers. * Costs shared between waste management and other areas of municipal public services. * Operation under a subsidy scheme. * Variation across jurisdictions. * Weak financial capacity and unsustainable provision.
	Demand	Access, coverage and quality	* Coverage of more than 90% in the majority of municipalities, both in Bogota and in the metropolitan area (official data collected only in formal settlements) * Success in reaching all socioeconomically vulnerable areas via the stratification transfer system.	* Estimated 90% coverage * Problems of low quality * Variation across areas depending on socioeconomic conditions	* Covers between 88 and 98% of households * Lower coverage in the Northeast periphery * Highly inefficient in quality and frequency but with great variation across jurisdictions.

Table B.2: Aspects of metropolitan governance in water provision

			Bogota	**Lima**	**Mexico City**
PROCESS	Coordination		* There is coordination between the municipalities. Even though water provision is a municipal function, the Bogotá company (EAAB) competes as a public society but with private logic. Provision to the area of Soacha next to Bogota.	* Intermunicipal coordination is not an issue since all municipalities are serviced by SEDAPAL. * Weak vertical coordination between SEDAPAL and municipalities in Lima and Callao.	* A multiplicity of actors and jurisdictions translates into fragmented models of provision. * Rare cases of municipal association; weak intermunicipal coordination. * Weak vertical coordination with Federal institutions.
RESULTS	Supply	Financial sustainability	* Tariffs are fixed according to six levels of "estratos" defined by the socioeconomic status of households. * $6m^3$ of water is provided to each household of estrato 1 for free. * Operational costs are covered by tariffs. * The company is considered financially healthy.	* Operational costs covered by tariffs. * Infrastructure investments not covered by tariffs. * Large infrastructure projects financed by central government transfers. * Tariffs have subsidies based on consumption. * SEDAPAL is transitioning to a subsidy based on socioeconomic status. * Overall, SEDAPAL is a financially healthy company.	* Tariffs cover 64% of operating costs, government subsidizes the rest. * Subsidies in Mexico City based on geographic criterion depending on the socioeconomic classification of neighborhood. * There is significant heterogeneity in the financial situation among jurisdictions depending on the provision scheme. * Provision in Mexico City appears to be relatively stable financially. * Small municipalities in the State of Mexico that do not meet the criteria for establishing their own service operator have worse financial conditions.
	Demand	Access, coverage and quality	* Almost 100% in legalized neighborhoods. * In Bogotá 98.6% of neighborhoods; in Soacha 82.8%; in Sabana 96.3%.	* Around 89% of households have a water connection inside their house. * Availability of the service is not a problem. * 24 hours of running water on average in Lima Centro. * Between 19 and 22 hours in the periphery.	* Piped water connection inside the houses of approximately 79% of metropolitan population. * 72% of population has daily access to water. * Highly uneven spatial distribution of access to the daily water service. * Most peripheral municipalities and boroughs have lower availability.

Table B.3: Aspects of metropolitan governance in public transport

			Bogota	**Lima**	**Mexico City**
PROCESS	Coordination		* There is a consolidated model for the construction of infrastructure, but without a real metropolitan approach. * Intermunicipal transportation is Departments' responsibility. * Transmilenio offers a service to only four stations outside of Bogota's borders, in Soacha	* The system is fragmented, but there have been efforts to integrate it jurisdictionally. * Integration with private operators is necessary. * Lima and Callao have agreed that both can provide permission to private companies to operate in both provinces. * There is no integration nor coordination between systems. For instance, different payment systems operate in the city for the Metro, the Metropolitano and secondary routes.	* Provision is fragmented 'administratively' between different transport systems and jurisdictionally between Mexico City and metropolitan municipalities. * There have been projects towards the integration and coordination of systems but the initiative has not developed successfully, with the exception of some elements such as payment methods (Metro and Metrobus).
RESULTS	Supply	Financial Sustainability	* The system is sustainable due to financial support, but is not self-sustainable. * Transmilenio is funded directly by the District Government of Bogotá. * The SITP has problems with being financially sustainable based on fares taken. * In the rest of the municipalities, intermunicipal metropolitan buses are run privately, and most are financially sustainable.	* After almost six years the Metropolitano has reached equilibrium point where the outgoings of the operation are covered by customer fares. * The Metro is subsidized by central government which allows people to access the service; otherwise fares would increase and become unaffordable for some population groups.	* Transport systems operating only in Mexico City are heavily subsidized. * Lack of technical analysis of costs and income structures. * Variability between systems and jurisdictions. * The commuter train, Suburbano, represents a case of uncertain financial sustainability. * Consession services face important financial investment, maintenance and operation problems.
	Demand	Access, coverage and quality	* Good coverage in general. * Problems in terms of quality in municipalities outside the city of Bogotá.	* High coverage but low quality. * 54% of Limeños think that transportation is one of the main problems in the city. Satisfaction with public transport is very low across the city	* Coverage is high in general, but peripheral areas experience problems with frequency or even lack formal transport services. * Concession service is highly inefficient, with poor quality, poor safety and low environmental sustainability. * The BRT system, Metrobus, and the Metro operate beyond capacity, affecting quality. * The suburban train is best rated in terms of frequency, safety and quality, but is also the most expensive.